

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re:	LEE et al.)	Docket No.:	PU2180
)		
Serial No.:	10/605,785)	Group Art Unit:	3713
)		
Filed on:	10/27/03)	Examiner:	R. Hsu
)		
For:	DIAGNOSTIC GOLF CLUB)	Due Date:	02/22/07
	SYSTEM)		
)		

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF (37. C.F.R. § 41.37)

Dear Sir:

This Appeal Brief is in furtherance of the Notice of Appeal, filed in this case on December 22, 2006. The fees required under § 1.17, and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying Transmittal of Appeal Brief.

CERTIFICATE OF MAILING/TRANSMISSION (37 C.F.R. § 1.8)

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Patent Office on the date shown below via electronic filing to TC 3700, where this application is currently pending.

Date of Deposit

2/22/07

Susan Glenn
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This brief contains the following items under the following headings, and in the order set forth below (37 C.F.R. 41.37):

- I. Real Party in Interest
- II. Related Appeals and Interferences
- III. Status of Claims
- IV. Status of Amendments
- V. Summary of Claimed Subject Matter
- VI. Grounds of Rejection To Be Reviewed on Appeal
- VII. Argument
- VIII. Claims Appendix
- IX. Evidence Appendix
- X. Related Proceedings Appendix

The final page of this brief bears the practitioner's signature.

I. Real Party in Interest

The real party in interest is Callaway Golf Company, the assignee of record.

II. Related Appeals and Interferences

There are no such prior or pending appeals, judicial proceedings or interferences known to the appellant that may be related to, directly affect or be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

The total number of claims in the application is 30. The status of all the claims is as follows:

Claims canceled: 1-16 and 21-24

Claims withdrawn from consideration but not canceled: None

Claims pending: 17-20 and 25-30

Claims allowed: None

Claims rejected: 17-20 and 25-30

The claims on appeal are claims 17-20 and 25-30.

IV. Status of Amendments

Applicants did not file any amendment subsequent to final rejection. Applicants' last amendment was submitted on August 16, 2006, prior to receipt of the final Office Action, which was mailed on November 1, 2006. Thus, all amendments have been entered and considered by the Examiner.

V. Summary of Claimed Subject Matter

A. Independent Claim 17

The subject matter defined in independent claim 17 is a diagnostic golf club system, as illustrated in Figure 1. The diagnostic golf club system includes a diagnostic golf club (10), a computer (28) and an interface mechanism (18). Par. 42, lns. 1-3. As better depicted in Figure 3, the diagnostic golf club (10) includes a club head (16) and a shaft (14) attached to the club head. Par. 42, lns. 3-4. A plurality of strain gauges (20, 21) are attached to the shaft. Par. 42, lns. 4-7; par. 49, lns. 1-7; par. 53, lns. 1-8; par. 59, lns. 1-8; Figs. 3 & 4. The strain gauges measure data related to the golf club during a golf swing. Par. 42, lns. 7-9; par. 63, ln. 1- par. 64, ln.. 4. The diagnostic golf club further includes an internal memory device (134), which may be located in the shaft. Par. 57, lns. 1-2; see Fig. 3. The internal memory device includes a non-volatile flash buffer memory capable of receiving and storing data from the strain gauges. Par. 70, lns. 1-2, par. 16, lns. 1-3; par. 70, lns. 1-2.

The computer (28) is located separate and spaced apart from the diagnostic golf club (10). See Fig. 1. When the diagnostic golf club is linked to the computer via the interface mechanism (18), the computer can retrieve the data that was stored in the internal memory device of the diagnostic golf club. Par. 43, lns. 1-3. The interface mechanism includes a connection plug (18a) with a plurality of pins (19) that connect to a plurality of receptors (not shown) on the diagnostic golf club. Par. 42, lns. 9-13; Fig. 1. With the interface mechanism connecting the diagnostic golf club to the computer, data stored in the internal memory device of the diagnostic golf club can be transferred to the computer. The computer then processes the transferred data to determine the forces and moments from the strain gauge measurements, which are then used to determine an appropriate shaft flex profile for a particular golfer. Par. 72, lns. 1-

3. The computer calculates six independent forces and moments, including axial force, transverse shear forces, bending moments and torsion. Par. 63, lns. 3-7.

One advantage of the present diagnostic golf club system is that the internal memory device (134) in the diagnostic golf club (10) is capable of storing data for multiple swings of the diagnostic golf club until the data is uploaded to the computer. Par. 17, lns. 1-4. Thus, use of the diagnostic golf club is not restricted by the diagnostic golf club's proximity to the computer (par. 17, lns. 6-8), nor is the diagnostic golf club burdened with data cables or wires to transfer data immediately to an external data processor (par. 15, lns. 7-8). Moreover, the non-volatile memory will not lose the stored data, if the diagnostic golf club is turned off or if the battery is removed. Par.27, lns. 1-3.

B. Independent Claim 25

The subject matter defined in independent claim 25 is a diagnostic golf club system including a diagnostic golf club (10), a computer (28) and means for transferring the swing load measurements to the computer, e.g. interface mechanism (18). Par. 42, lns. 1-3; Fig. 1. As better depicted in Figure 3, the diagnostic golf club (10) includes a club head (16) and a shaft (14) attached to the club head. Par. 42, lns. 3-4. The diagnostic golf club further includes means for measuring swing loads of a golfer during a golf swing, e.g., strain gauges (20,21), disposed on the shaft. Par. 42, lns. 4-9; par. 49, lns. 1-7; par. 53, lns. 1-8; par. 59, lns. 1-8; par. 63, ln. 1- par 64, ln. 4; Figs. 3 & 4. The diagnostic golf club further includes an internal memory device (134), which may be located in the shaft. Par. 57, lns. 1-2; see Fig. 3. The internal memory device includes a non-volatile flash buffer memory capable of receiving and storing data from the strain gauges. Par. 70, lns. 1-2, par. 16, lns. 1-3; par. 70, lns. 1-2. The internal memory device can

store data for multiple swings of the diagnostic golf club until the data is uploaded to the computer. Par. 17, lns. 1-4.

The computer (28) is located separate and spaced apart from the diagnostic golf club (10). See Fig. 1. When the diagnostic golf club is linked to the computer via the means for transferring the swing load measurements to the computer, e.g., interface mechanism (18), the computer can retrieve the data that was stored in the internal memory device of the diagnostic golf club. Par. 43, lns. 1-3. With the diagnostic golf club connected to the computer, data stored in the internal memory device of the diagnostic golf club can be transferred to the computer. The computer then processes the transferred data to determine the forces and moments, including axial force, transverse shear forces, bending moments and torsion (par. 63, lns. 3-7), from the means for measuring swing loads of a golfer during a golf swing, which are then used to determine an appropriate shaft flex profile for a particular golfer. Par. 72, lns. 1-3.

VI. Grounds of Rejection to Be Reviewed on Appeal

The following grounds of rejection are to be reviewed on appeal:

1. Whether claims 17-20 and 25-30 are unpatentable due to non-statutory obviousness-type double patenting based on claims 1-17 of U.S. Patent No. 6,638,175 to Lee et al.
2. Whether claims 17, 19, 25-27, 29 and 30 are unpatentable under 35 U.S.C. § 103(a) over U.S. Patent No. 3,792,863 to Evans in view of U.S. Patent No. 4,940,236 to Allen.
3. Whether claims 18, 20 and 28 are unpatentable under 35 U.S.C. § 103(a) over Evans and Allen and further in view of U.S. Patent No. 5,472,205 to Bouton.

VII. Argument

A. Non-Statutory Obviousness-Type Double Patenting

Claims 17-20 and 25-30 were rejected under the judicially created doctrine of non-statutory obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6,638,175. A Terminal Disclaimer with respect to the '175 Patent accompanies this Appeal Brief.

B. Rejection Under 35 U.S.C. § 103(a) over U.S. Patent No. 3,792,863 to Evans in view of U.S. Patent No. 4,940,236 to Allen.

1. Claims 17, 19 and 29

Independent claim 17 recites a diagnostic golf club system comprising in part a diagnostic golf club and a computer, the diagnostic golf club including “an internal memory device...capable of storing data for multiple swings of the diagnostic golf club until the data is uploaded to the computer via the interface mechanism,” and the computer “us[ing] the data related to the diagnostic golf club during a golf swing to calculate six independent forces and moments, the six independent forces and moments including axial force, transverse shear forces, bending moments, and torsion.” The internal memory device, which is specifically claimed as a non-volatile flash buffer memory, enables the diagnostic golf club to store on the golf club itself swing data obtained by the strain gauges on the golf club. Even if the golf club is turned off or if the battery is removed, the data is stored on the golf club until it is transferred, by way of an interface mechanism, to a computer located separate and spaced apart from the golf club. The non-volatile flash buffer memory can store temporal data for up to 60 swings of the golf club before the data must be uploaded to a computer. This diagnostic golf club system is very flexible, since a user swinging the diagnostic golf club need not be anywhere near the computer

for multi-swing data capture to occur. Once the data has been uploaded to the computer, the computer processes the data to calculate six independent forces and moments, including axial force, transverse shear forces, bending moments and torsion.

No combination of Evans and Allen makes obvious the invention of claim 17. Evans discloses an athletic swing measurement system that uses radio or wire means to immediately transmit data from the athletic apparatus to a remote recording or playback console, where it is then stored apart from the athletic apparatus. Fig. 1 of the Evans patent shows that data is stored in a digital memory 36, 38 or 40 only after it has been transmitted from the golf club 10 to the FM receiver 30, and Evans states, "The receiver 30 and other signal processing and display circuits and components described below may be housed in a record/playback console such as that disclosed in the aforementioned patent." Col. 2, lns. 35-39. The "aforementioned patent" is Evans' earlier patent, U.S. Patent No. 3,270,564, which is described as disclosing an athletic implement that transmits a signal "to a nearby console." Thus, Evans fails to disclose an internal memory device on the diagnostic golf club, much less a non-volatile flash buffer memory on the golf club.

Allen discloses a golf club with a self-contained ball distance computer and a visual display LCD assembly "to display direct total yardage traveled by the impacted ball." Col. 5, lns. 25-26. Applicants respectfully submit that Allen fails to disclose a memory like that recited in independent claim 17. Although the word "memory" is mentioned in the Allen patent, it appears only twice, at col. 8, ln. 11 and in claim 3, ln. 4. The "memory" that Allen discloses is merely a holding stage 122, which holds a DC level signal at the input of A/D converter 120 for eight seconds while displayed on LCD display 21. See col. 8, lns. 54-56. The Allen patent states:

Capacitor 148 integrates the gated transducer signal at input 31. The holding stage 122 provides an eight-second holding pulse for integrating capacitor 148, so that the numerical distance displayed [sic] by display 21 appears for eight seconds and then is reset as capacitor 148 is discharged by stage 122.

(emphasis added) Col. 9, Ins. 25-30. The Allen golf club, which does not have an internal memory device that includes a non-volatile flash buffer memory, will lose any measured yardage after eight seconds. Moreover, the holding stage of the Allen golf club cannot “stor[e] data for multiple swings of the diagnostic golf club until the data is uploaded to the computer via the interface mechanism,” as recited in claim 17. Instead, the Allen golf club briefly displays distance information for a single golf club swing. Immediately after a swing the Allen golf club will display a ball distance for eight seconds. The holding stage is then reset and that signal permanently eliminated.

One of ordinary skill in the art, therefore, would not have thought to combine the “memory”/holding stage disclosed by Allen with the Evans athletic swing measurement system. The Evans system, which uses radio or wire means to immediately transmit data from the golf club to a remote recording or playback console, provides feedback on club head velocity, twisting or torsion of the club head, and flexure (see Evans, col. 1, ln. 70 to col. 2, ln. 2), whereas the Allen golf club provides a single reading of ball distance. Allen’s eight-second holding stage/“memory” would be insufficient to store the velocity, torsion and flexure data for even a single swing of the golf club. There is no motivation, in either Evans or Allen, to make such a change.

In addition to the lack of an internal memory capable of storing multi-swing data on the golf club, neither Evans nor Allen discloses a computer that “uses the data related to the diagnostic golf club during a golf swing to calculate six independent forces and moments, the six

independent forces and moments including axial force, transverse shear forces, bending moments and torsion.” The Examiner asserts that based on “Fig. 2 and the related description thereof” Evans teaches the ability of the computer/console to calculate the six independent forces and moments. The Evans system, however, merely acquires and displays oscilloscope traces of the outputs of each of an accelerometer, torque gage and flex gage versus time. See Evans col. 4, lines 6-50 and Fig. 2. The Evans system does not manipulate the outputs of the accelerometer, torque gage or flex gage to calculate axial force, transverse shear forces, bending moments or torsion. The Allen golf club uses the compression signal from a transducer to determine a golf ball velocity and then calculate golf ball distance. Allen, like Evans, does not disclose calculating six independent forces and moments. Thus, no combination of Evans and Allen makes obvious a diagnostic golf club system including a computer that uses golf club swing data to calculate axial force, transverse shear forces, bending moments and torsion. Applicants respectfully submit that independent claim 17 and its dependent claims 19 and 29 are therefore patentable over the combination of Evans and Allen.

2. Claims 25-27 and 30

Independent claim 25 recites a diagnostic golf club system comprising in part a diagnostic golf club and a computer, the diagnostic golf club including “an internal memory device...capable of storing multiple swing load measurements indicative of multiple golf swings until the measurements are transferred by the transferring means to the computer,” and the computer “us[ing] the swing load measurements to calculate six independent forces and moments, the six independent forces and moments including axial force, transverse shear forces, bending moments, and torsion.” As discussed above, the non-volatile flash buffer memory can store temporal data for up to 60 swings of the golf club before the data must be uploaded to a

computer, thereby providing the diagnostic golf club system with greater flexibility, since the golf club need not be anywhere near the computer for multi-swing data capture to occur. Once the data has been uploaded to the computer, the computer processes the data to calculate six independent forces and moments, including axial force, transverse shear forces, bending moments and torsion.

The combination of Evans and Allen does not make obvious the invention of claim 25. As discussed above in subsection 1, Evans fails to disclose a diagnostic golf club having an internal memory device. Instead, the Evans diagnostic golf club immediately transfers data via radio wire means to a nearby record/playback console. Allen, meanwhile, discloses a golf club with an eight-second holding stage to display a ball distance for eight seconds before the signal is permanently removed. The combination of Evans and Allen would result in a diagnostic golf club system that includes a golf club having radio wire transfer means and an eight-second holding stage that still cannot store data for multiple swings on the golf club before that data must be transferred to the computer. As a result, the combined Evans and Allen diagnostic golf club system would lack the flexibility present in the invention of claim 25, as use of the Evans and Allen golf club would be limited to the proximity of the golf club to the nearby record/playback console. In addition, neither Evans nor Allen discloses a computer that calculates six independent forces and moments, including axial force, transverse shear forces, bending moments and torsion. The Evans system displays oscilloscope traces of the velocity, torque and flexure of the Evans club during a swing, but does not calculate any forces or moments. Allen merely calculates a golf ball velocity and golf ball distance. Thus, the combination of Evans and Allen fails to disclose or suggest that a computer use data from a diagnostic golf club to calculate six independent forces and moments. Accordingly, Applicants

respectfully submit that independent claim 25 and its dependent claims 26, 27 and 30 are patentable over Evans and Allen.

C. Rejection Under 35 U.S.C. § 103(a) over U.S. Patent No. 3,792,863 to Evans in view of U.S. Patent No. 4,940,236 to Allen and further in view of U.S. Patent No. 5,472,205 to Bouton.

Claims 18, 20 and 28

Claims 18 and 20 depend from independent claim 17, and claim 28 depends from independent claims 25. As discussed above in Section A, independent claims 17 and 25 are believed to be patentable over Evans and Allen. Bouton, which was cited for disclosing a video golf system that uses a serial data transmitter, fails to make up for the deficiencies of Evans and Allen with respect to the internal memory device's ability to store on the diagnostic golf club data for multiple swings of the diagnostic golf club until that data is uploaded to a computer. Accordingly, Applicants respectfully submit that dependent claims 18, 20 and 28 are patentable over the combination of Evans, Allen and Bouton.

Respectfully submitted,

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VIII. Claims Appendix

17. A diagnostic golf club system comprising:

a diagnostic golf club comprising a club head, a shaft attached to the club head, a plurality of strain gauges attached to the shaft, the strain gauges capable of measuring data related to the golf club during a golf swing, and an internal memory device including a non-volatile flash buffer memory capable of receiving and storing data from the strain gauges;

a computer located separate and spaced apart from the diagnostic golf club for processing the data stored in the internal memory device; and

an interface mechanism removably coupled to the diagnostic golf club for providing communication between the diagnostic golf club and the computer, the interface mechanism including a connection plug having a plurality of pins for connection to a plurality of receptors on the diagnostic golf club,

wherein the internal memory device is capable of storing data for multiple swings of the diagnostic golf club until the data is uploaded to the computer via the interface mechanism, and

wherein the computer uses the data related to the diagnostic golf club during a golf swing to calculate six independent forces and moments, the six independent forces and moments including axial force, transverse shear forces, bending moments, and torsion.

18. The system according to claim 17 wherein the diagnostic golf club further includes a circuit board positioned within a hollow interior of the shaft, the circuit board including the internal memory device, a power control circuit, a signal conditioning circuit for the plurality of strain gauges, and a serial communication circuit.

19. The system according to claim 17 wherein the diagnostic golf club is selected from the group consisting of a driver, a fairway wood, an iron and a putter.

20. The system according to claim 17 wherein the interface mechanism further includes a serial interface device.

25. A diagnostic golf club system comprising:

a diagnostic golf club comprising a club head, a shaft attached to the club head, means for measuring swing loads of a golfer during a golf swing, the swing load measuring means disposed on the shaft, and an internal memory device including a non-volatile flash buffer memory capable of receiving and storing swing load measurements generated by the swing load measuring means;

a computer located separate and spaced apart from the diagnostic golf club for processing the swing load measurements stored in the internal memory device; and

means for transferring the swing load measurements to the computer,

wherein the internal memory device is capable of storing multiple swing load measurements indicative of multiple golf swings until the measurements are transferred by the transferring means to the computer, and

wherein the computer uses the swing load measurements to calculate six independent forces and moments, the six independent forces and moments including axial force, transverse shear forces, bending moments, and torsion.

26. The system according to claim 25 wherein the golf club is selected from the group consisting of a driver, a fairway wood, an iron and a putter.

27. The system according to claim 25 wherein the non-volatile flash buffer memory is a ring buffer memory.
28. The system according to claim 25 wherein the transferring means includes a connection plug and a serial interface device, the connection plug having a plurality of pins for connecting to a plurality of receptors within the shaft for transferring the swing load measurements from the diagnostic golf club to the computer.
29. The system according to claim 17 wherein the computer processes the six independent forces and moments to determine an appropriate shaft flex profile for an individual golfer.
30. The system according to claim 25 wherein the computer processes the six independent forces and moments to determine an appropriate shaft flex profile for an individual golfer.

IX. Evidence Appendix

None

X. Related Proceedings Appendix

None